Great research!

and how to write about it

Olle Gällmo

Thanks to Simon Peyton Jones and Björn Victor!

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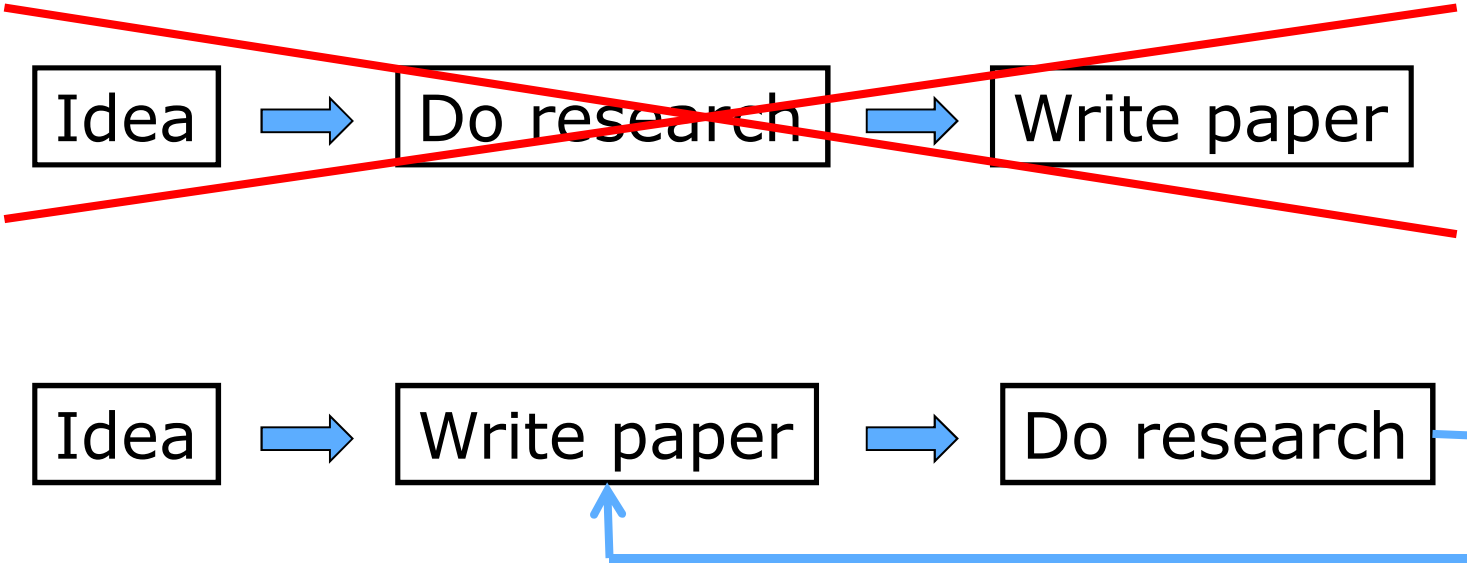
Where to begin



Let the paper feed your research!
(not the other way around)

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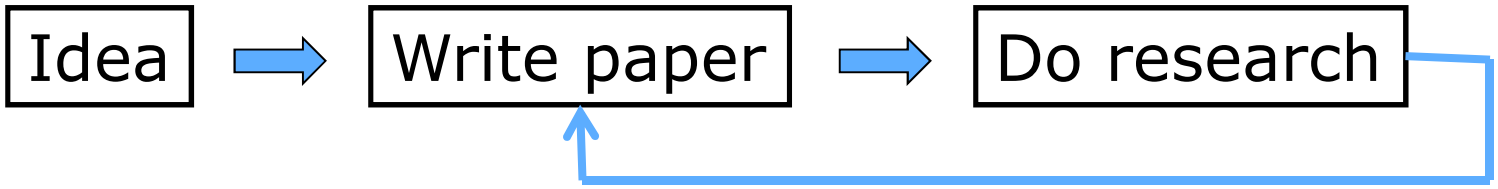
Where to begin



- Start writing day 1!
- Make a disposition of the whole paper!
  - If it is an examination paper, or thesis, discuss it with your reviewer/examiner
- Save coding and experiments for later!
  - sometimes much later
  - may turn out to be unnecessary for this paper
    - may lead to future papers

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Who is the reader?

- Consider who you're writing for!
  - What can they be expected to know?
- Will your paper make sense 10 years from now?
- Be explicit and comprehensive!
  - Don't take things for granted
- Make sure that the reader does not lose track of the goal or main idea

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Narrative flow

- Here is a problem
- It is an interesting problem
- Here is the idea
- The idea works (details, data)
- Here's how the idea compares to other approaches

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Structure

- Title
- Abstract

If you need a glossary, insert it here

1. Introduction
2. Body (several sections)
5. Related work (that is not part of introduction)
6. Conclusions and future work

- References

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Title

- The 'face' of your report
  - Maybe few people read your paper, but many will read the title!
- You have 2 seconds to catch the reader's interest!
- Short
- Catchy
- True

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Abstract

- Written last!
- Sell your idea!
  - Make the reader want to stay with you!
- Single paragraph, 100-200 words
- Four parts
  1. What's the problem
  2. How did you solve it
  3. What are the results
  4. Conclusion (what it means for the future)
- Make sure the abstract stands on its own!
  - No reference tags
  - Avoid acronyms

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Introduction

1. Describe the problem
   - Including prior work but not necessarily all related work
2. State your contributions
   - Perhaps as a bulleted list

- Avoid "The rest of this paper is structured as follows ..."
  - Better to refer to the different parts of the paper in 1. and 2.

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Body

- Subject dependent. For example:
  - Theory → Method → Results
  - Requirements → Design → Implementation → Evaluation
  - Existing methods → Comparison → Suggestions
  - ...

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Body: When explaining things

- Do it top-down!
- Intuition first, details later
  - Easier to understand the details
  - A reader who skips the details, gets something valuable anyway
- Choose the most direct route to the idea
  - The way you came up with the idea may not be the best way

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Body: The details

- The *introduction* makes claims
- The *body* provides evidence
- Check each claim in the *introduction*, identify the evidence in the *body* and forward reference to it from the claim!
- Evidence can be analysis and comparison, theorems, measurements, case studies ...
- Imagine a reader who wants to repeat your experiments. Is your information enough to do that? Be rigorous!

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Related work

- Part of the introduction or after the body
  - After the body: easier to explain, shorter intro
  - Prior work ⊂ Related work
- Credit is not like money!
  - Giving credit to someone else does not take away from yours!
  - Failing to give credit, however, does!
    - If you claim an idea is yours when it isn't, you either did not know (bad), or you knew but pretended it was yours (very bad)

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Conclusions and future work

- Summarize your contributions
  - Be honest!
  - Acknowledge weaknesses in your work
- Conclusions from the results
- Implications for the future
- No new information in this section!

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References

- Always refer to the literature when
  - you first introduce an established concept
  - you claim things for which there is no evidence in this paper
- Use numerical tags within brackets [1]
- Enumerated reference list
  - sorted in alphabetical order (or in reference order)
  - Reference must be complete (to find the source)
- Avoid web references!
  - Content may, and probably will, change
  - Imagine someone reading your paper in 10 years
  - If you must use web references, date them in the list

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Language

- Don't write as you talk! (or chat)
- Grammatically correct English
  - including pronouns ('the', 'a', etc)
- Be clear, concise and correct!
- Be personal if you wish, but within reason
  - Don't address the reader directly ("you")
  - "We" meaning you and the reader may be OK
  - "We" as in you, the only author, is weird
- Spell check!
- Have someone else proof read
- Spell out acronyms first time they are used
- Use figures!

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The most common mistakes

- Forgetting who the reader is
- Taking too much for granted
- Poor reproducibility (lack of details)
- Not supporting your claims by references
- Incomplete references
  - Author and title is not sufficient
- Unnecessary web references
  - not dated

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Good luck!